A Thesis.

The First

Three Months of Life.

Respectfully Submitted

to the

Faculty

of the

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By

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Gentlemen:

How strange are life's beginnings! What is Conception? What is that deep impress which causes the impregnation of the ovum and it's developement into a being, in all respects, similar to the one from which it was derived? We term it the principle of life; for we know no more. Many and varied, though are the kinds of life, as the material bodies they occupy. The life of the rose and of the oak, of the lily and of the palm are no more alike than my life principle is to that of the fly I blow from off my hand. My spirit is as far unlike that of the high Cherub by the throne of God, as I am beneath him. The oak can

never be a rose, any more than I
can be a Seraph. The differance
of living beings lies, not in their
form only, but also - and essentially -
ly - in their life, their spirit.

But all living beings, of
this earth, though many their
kinds, are all the offspring of
a parent or parents like themselves.
They have their origin in the union
of a sperm derived from the
male, and the germ in the ovum
of the female. Among some of
the lower orders of animals, as
also in most plants, male and
female are combined in one in-
dividual.

Man and woman. Thus, male
and female, as other animals, has
God created human beings; in

order that they may reproduce their species.

Each possesses but part of the organs of generation. Those of the female, the internal, or most essential, only will I notice, are: the ovaries, the ovarian ligaments, the uterus, the Fallopian tubes, and the vagina.

The ovaries are two oval bodies, situated in the cavity of the pelvis, one on each side of the uterus, to which they are attached principally by the ovarian ligament. They are completely invested by the peritoneum, except along the anterior border; beneath this is the true fibrous coat of the organ, the tunica albuginea which is very firm and dense and incloses a vascular structure, the stroma. In this stroma are found the Graafian vesicles, the ovapac of the future ova.

The ovarian ligaments, although

scarcely noticed by writers, are very essential to impregnation. They are two rounded cords, which extend from each superior angle of the uterus to the inner extremity of the ovaries; they consist of fibrous tissue and muscular fibres from the uterus. It is beyond the faintest doubt, that these ovarian ligaments are the ducts through which the fecundating principle of the male semen is conveyed to the ovum in the ovary.

The Uterus is the organ of gestation, receiving the impregnated ovum in its cavity, there retaining it during the nine intra-uterine months of its life, and at term is the principal agent in its expulsion.

The Fallopian tubes convey the ova from the ovaries to the cavity of the uterus. They are two in number. They vary

in length from three to five inches. Their canal is very minute, at the entrance to the uterus, so small as scarcely to admit the passage of a fine bristle; but it widens somewhat as it approaches its distal, or fimbriated extremity.

The vagina is a membranous canal about six inches in length. It extends from the neck of the uterus to the external organs of generation.

The impregnating fluid of the ovum of female, is derived from the male. It is principally a secretion of the testes; organs similar to the ovary of the female.

What that life giving essence, that high spiritual influence, of the semen is, alone is known to Him who gave it its high potency. Smile at this high potency before you do at those of our medicines; the highest of which are yet gross

compared with that which causes the little ovum, with which only the minutest portion comes in contact, to grow into a full and perfect man, similar in all to its parent.

After a fruitful union of the male and female, which is most liable to occur a short time after a menstrual period, an ovum, sometimes two, becomes impregnated, that is; receives into itself some strange influence, derived from the very inmost, from every physical and spiritual part of the father.

But how, and where, does conception or the impregnation of the ovum take place? Some authors say nothing on this subject. Others acknowledge their ignorance and barely make a guess at it, But Many, in learned discourse, but most miserable logic and lamest reasoning, give explainations which they themselves do not understand

nor are able to demonstrate. It is most uni-
versally held and believed that the semen
passes up through the cavity of the uter-
us, out through the Fallopian tubes and
then falls upon the ovary - but how it
gets in through the peritoneum and
tunica-albugenia to the ovum in the
ovary; for they well know, that there,
and only there, in the Graafian vesicle,
impregnation takes place; this they can-
not tell. For they have got upon the
wrong road from the beginning. No,
the Fallopian tubes were no more made
to convey any thing, in the direction,
from the uterus towards the fimbriated
extremity, than the Aorta was made to
convey blood into the left ventricle of
the heart.

That little unnoticed ovarian
ligament is one of the most essential

parts of the organs of generation. It, and, without the slightest doubt, it alone is the duct through which that life-giving - spiritual influence, borne by by the semen, is conveyed to, and impregnates the ovum. If it were tied, without doubt, impregnation would never take place.

The semen of the male, after being deposited within the vagina of the female, is doubtless taken up by the absorbing mouths, or openings of a duct, or ducts, going up through the body of the uterus, out through the ovarian ligament and the stroma of the ovary, (which I believe to be but canals or ducts leading each to a Graafian vesicle), to a Graaffian egg-pack, there to impregnate its little growing ovum.

The Graafian vesicles, at their

first formation, are small and deeply seated in the substance of the ovary; but as they increase in size they make their way toward the surface; and when mature form little prominences on the surface of the ovary covered only by the peritoneum. Each follicle is formed with an external membranous envelope lined with a layer of epithelial cell. The cavity is filled with an albuminous fluid in which is seen the minute ovule. The human ovum is extremely small, according to Bischoff, measuring from $\frac{1}{240}$ to $\frac{1}{220}$ of an inch in diameter. Its external covering is called the vitelline membrane, or chorion of the impregnated ovum. Within this is contained the yelk or vitellus, answering to the yelk of the hen's egg. In the substance of the yelk is imbedded the germinal vesicle; and within

the germinal vesicle is the germinal spot.

When an ovum is fully matured it makes its way through the coats of the ovary — the tunica albuginea and peritoneum — to its surface where its is received into the Fallopian tube, and if unimpregnated, passes off. The ripening and passage of an egg from the human female occurs, or should occur if she be healthy, at regular periods of twenty-eight days. This causes her menstrual flows.

But an ovule that has received into itself the principle of life is retained and undergoes that strange transformation; from a cell to a human being,

"a spirit, clad, in earth."

The knowledge we possess of the

changes which take place in the im-
pregnated ovum is derived almost
exclusively from observations on the
ova of mammiferous animals; but
it may be inferred that similar
changes ensue in the human ovum.

The impregnated egg, in the ovary,
is larger than the barren, also fuller
and more dense. When it is ready
to be evolved, by some vital cause
a congestion of the Fallopian tubes
takes place, when its fimbriated ex-
tremity lays hold of the ovary,
where the ovule appears, and receives
it into its canal. By this time
it has undergone a change in
which the germinal vesicle and spot
have disappeared.

As the ovum approaches
the middle of the Fallopian tube, it

begins to receive a layer of a glutin-
ous substance which forms on the sur-
face of the zona pellucida. It is at
first exceedingly fine and transparent;
but at the lower part of the tube
it blends with the zona and, assume
the character of the Chorion. Thus the
old vitelline membrane now becomes the
chorion.

When the ovum has passed the middle
of the Fallopian on its way to the uter-
us, the vitellus, which, before, was one uniform
mass, begins to be resolved into a number
of smaller spheroidal masses; first into
two, then four, then eight, then into six-
teen &c. What causes this is unknown to
us.

About the time the ovum has reached
the uterus the dividing of the vitellus
has ceased. Its substance seems then to

have been resolved into its smallest and ultimate divisions, and now presents as uniform an appearance as it did before it commenced its subdivisions. But on a careful examination it will be found that this fluid is a mass of granular substance, apparently, and that these granules are aggregated into numerous spherical masses, but are not yet provided with an enveloping membrane.

But before long each of the globular segments becomes surrounded by a membrane and passes to the surface and accumulating there form the blastodermic membrane, while the central part of the yelk remains filled with a clear fluid.

The ovum now consists of two coats: the chorion, and the blastodermic membrane. The blastodermic consists of an outer or serous, and an inner or mucous coat. Soon after the formation of the chorion, from its surface are sent numerous

villi which grow fast to the uterus, when it reaches that organ. Soon after the formation of the blastoderonic, or germinal membrane, at one spot on its surface, is seen a small opague roundish spot. This spot is the germinal area and is the point at which the embryo first appears. About this time is formed the two coats of the germinal membrane: the serous, and mucous. From the external, or serous coat, is, it is thought, developed the bones, muscles, and integuments; while the mucous serves for the formation of the visceral system of organs. It is on the mucous layer that the embryo is seen, at first as a worm, presenting two prominant extremities; the cephalic and caudal. It then begins to rise gradually towards the inside of the umbilical vesicle, its anterior or front part being toward the interior. The two extremities bend somewhat towards each other;

the cephalic forwards and slightly downwards while the caudal forwards and upwards. At the same time the membrane folds over the two ends and sides towards the back of the embryo. This process being still further continued: the embryo still rising higher; and the external layer of the germinal membrane extending more, and more over it, from its abdominal, towards its dorsal aspect, where the folds at last meet, and coalesce, enclosing the embryo in a shut sac, the amnion. While the inner of the two layers of the germinal membrane, now folded upon itself, forms the sac of the amnion, the outer lines the internal surface of the zona pellucida, or as it has now become, the chorion.

The internal surface of the amniotic sac consisting of the serous coat. The inner layer of the germinal membrane extends over

the whole yelk and has become the vitel-
line sac or umbilical vesicle.

It is from the contents of the um-
bilical vesicle that the embryo is nourish-
ed until means are furnished for it to
derive nutriment from the mother.
An artery and two veins, the umpha-
lo-mesenteric vessels, extend from the abdo-
men of the embryo up into the substance
of the yelk.

But this supply would soon be exhausted,
and the child die were it not for another
provision. Soon a pear-shaped solid mass
of cells projects from the inferior or
caudal extremity of the embryo, and
is developed into a vesicle named the
allantois. It grows very rapidly and
elongates itself until it reaches the
chorion, into the villi of which it takes
root and is brought into connection

with the uterus. The moment it reaches the chorion and becomes connected with it, the placenta is begun to be formed, and nutriment is now derived from the mother. A circulation, between the embryo and the mother is now established through the allantoid or umbilical vessels, two arteries and one vein. These are the vessels of the umbilical cord. The umphalo-mesenteric vesicle now fades away, and at last is entirely lost.

Before the ovule reaches the uterus, certain preparations are made in that cavity, for its reception. These changes consist in a developement of the mucous coat of the uterus which results in the formation of the decidua The decidua consists of all the membranes outside of the chorion which are produced by the mother. When the ovum enters the

uterus it becomes imbedded in the structure of the decidua, which forms a soft and downy bed. The decidua at the point of the entrance of the ovum is pushed, as it were, inwards before the ovum, and soon grows all around it completely enclosing it; so that all over its surface, on the outside of the chorion, it is covered with this soft mucous membrane of the uterus. The part covering the surface towards where it entered and toward the fundus is termed the uteri-epichorion. The part below is the epichorion. After the ovum is covered by the decidua or mucous membrane of the uterus, there is a mutual growing together of the outer surface of the chorion and the uteri-epichorion and epichorion. The epichorion is not fixed but is gradually pushed

away before the growing membranes until it reaches the walls of the uterus. But the utero-epichorion becomes joined to the fundus, (generally), of the uterus and becomes the uterine part of the placenta. The placenta consists of two parts, the foetal and the uterine, or maternal; they are seperated by the chorion. Yet, by the allantoid vesicle growing into the numerous little villi of the Chorion upon its internal surface, and the utero-epichorion growing on to its outer surface, there is a union formed between the two parts of the placenta. The vessels from the mother, and those from the child, become perfectly anastomosed so that a peculiar circulation is produced.

In the placenta the venous blood from the foetus is aërated and again

returned - laden with oxygen and nutriment. This circulation is kept up until the child is born.

The Amniotic-sac, as the child grows becomes larger and larger until it has come in contact with all the interior walls of the chorion, and placenta; covering the outside of the umbilical cord and is continued over the child forming its skin. In this sac a fluid, the amniotic fluid, is contained. It is produced by the exhalations from the surface of the foetus. At birth it is the water which is ejected before delivery.

Nine months within its mother's womb! The strange home, wherein, for the immortal soul, is built a house of flesh. Gradually, according to wonderful and mysterious laws, the child

is developed from a minute egg to a perfect human being. This change every one who walks the globe, has undergone. After remaining nine months within the uterus, the foetus is fully formed and is expelled from the mother, now to live in a different sphere, and in a different manner.

How wonderful are the ways of the Great God! Indeed am I fearfully made. How strange is my creation, that I should have been born a living soul, that that one ovule, from which I grew, was pingled out from the myriads that are lost. Of the great creation, let me reflect awhile, and I am lost in thought.

"My heart is awed within me when I think
Of the great miracle which still goes on
In silence round me — the perpetual work
Of Thy creation, finished, yet renewed
Forever."